Cumulative Effects Issues
Baseline Information for Wetlands
Past, Present, and Future

INTRODUCTION

The purpose of this baseline information on wetlands is to analyze the cumulative effects of the Tier 1 Environmental Impact Statement for the proposed I-69 in southwestern Indiana. The information represents efforts to identify wetland issues and to evaluate past, present, and future trends in southwestern Indiana and the state. Terms used in the text of this report are defined at the end of this appendix.

GEOGRAPHIC AND TIME PERIOD CONTEXT:

Wetlands are one of four major resources that are being analyzed for cumulative impacts as a result of I-69. These four resources include farmland, forests, wetlands, and threatened and endangered species. These four resources were selected based upon their importance in southwestern Indiana as well as input from various resource agencies.

For wetlands the geographic scope of the cumulative effects analysis is the 26-county study area. This study area was identified early in the project. The past, present, and future analysis of wetlands will look not only at the 26-county study area but the entire state of Indiana as well.

The time period that will be studied for this cumulative effects analysis includes past years to present day. The earliest available information is estimates from 200 years ago. This estimate on wetlands is given by the U.S. Fish and Wildlife Service.

The analysis will also look into the future to identify future trends. This future analysis will be from the present day to the year 2025. The year 2025 is also the future analysis year for the economic modeling and the transportation demand modeling.

INDIANA WETLANDS - PAST AND PRESENT:

The wetland story begins with the Swampland Acts of 1849, 1850, and 1860. The U.S. Congress passed these acts to encourage farmers to reclaim wetlands by constructing levees and drains to reduce flooding. The U.S. Department of Agriculture helped farmers drain wetlands by conducting an inventory of "swamp and overflowed lands in the U.S. that can be reclaimed for agriculture." (U.S. Department of Agriculture, 1906) Beginning in 1936, the U.S. Department of Agriculture provided cost sharing for wetland drainage.

Wetland preservation began with President Theodore Roosevelt who established the first National Wildlife Refuge in 1903 to protect Pelican Island, Florida, a nesting site for water birds.

Often the early wetland efforts at preservation worked at cross purposes with other federal programs and policies on wetland issues.

In the 1970s and 1980s the focus on conservation became clearer with the passage of the Federal Water Pollution Control Act Amendments of 1972 which included Section 404 regulating discharges of dredged and fill material in waters of the United States. While Section 404 initially did not apply to wetlands, the Supreme Court ruled in a 1975 court case, Natural Resources Defense Council v. Calloway, that the definition of waters of the United States included wetlands.

The Executive Order 11990, issued by President Carter in May of 1977 directed the agencies to minimize destruction, loss or degradation of wetlands. The 1985 Food Security Act completed the shift for destruction to conservation by including wetland conservation sections (known as the "Swampbuster" provisions) aimed at denying farm program benefits to those who drain wetland areas.

Although the recent changes in policies and programs are changing the past trends in available wetland acreages, millions of acres have been lost during the 18th to 20th century in the United States and in Indiana. The U.S. Fish and Wildlife Service estimated that Indiana had some 5,600,000 acres of wetland prior to settlement 200 years ago which covered approximately 24.1% of the State (Indiana Department of Natural Resources, 1996). The U.S. Department of Agriculture conducted wetland inventories in 1906 and in 1922. The number of wetlands identified in these two inventories were 625,000 acres (1906) and 778,000 acres (1922). In a 1954 survey of wetlands, Shaw and Fredine reported 267,100 wetland acres in the State of Indiana.

With the change from destruction to conservation, the wetland acres have increased. The most recent analysis of wetlands was conducted by the Indiana Department of Natural Resources and showed approximately 813,032 acres of wetland habitat in the mid-1980s when the data were collected (Rolley, R.E., 1991)

These values indicate that the policy change at the federal level has effected the wetlands trend in Indiana. Although one can logically estimate that wetlands have continued to increase in Indiana, there are no records showing the loss or gain of wetlands to the present day. Table 1 shows the change in wetland acres over the past 200 years. Figure 1 shows this information in graphical form.

Over the past 200 years, Indiana has lost approximately 85% of its wetlands. Among the 50 states, Indiana ranks 4th in proportion of wetland acreage lost (Dahl, T.E., 1990). The vast majority of the wetlands loss was due to drainage for agricultural production.

The future for wetlands in Indiana has been defined through the Indiana Wetlands Conservation Plan (Indiana Department of Natural Resources, 1996). The purpose of the plan is to "*achieve conservation in ways that are beneficial to all Hoosiers. The plan establishes common ground on which progress in wetlands conservation can be made, and it sets forth specific actions designed to achieve that progress*."

SOUTHWESTERN INDIANA WETLANDS - PAST AND PRESENT

Table 2 shows wetlands in southwestern Indiana. In the mid 1980's R.E. Rolley with the Indiana Department of Natural Resources developed a database of wetlands by county. This information showed that Indiana had approximately 813,032 acres of wetlands. Of this wetland acres, 245,817 acres are located in southwestern Indiana. That information is the only published information regarding wetlands by county in Indiana.

Much of this wetland acreage in southwest Indiana is spread over a number of counties. Of the 5 counties with wetlands accounting for over 10% of their total land area the only county in southwestern Indiana is Pike County (Liu, Shelly, 1996). The other four counties, Kosciusko, Lagrange, Noble, and Steuben counties, are all located in the northeastern corner of Indiana.

WETLANDS - FUTURE TRENDS

The most recent policy statements on wetlands came from both the President H.W. Bush and President Clinton administrations when they adopted policy goals of "no net loss of wetlands". (White House, 1991 and 1993) Preservation of wetlands is a goal for all local, state, and national projects. For every acre of wetland that is taken as a part of a project, several acres will be created as described in the mitigation plan.

Trend line analysis for wetlands for the entire state, see Figure 1, did not result in accurate forecast information. The recent changes in wetland acreages resulted in regression analysis not being effective in forecasting wetland trends. For southwestern Indiana the only information available is for a single year. Trend line analysis will not work for forecasting future wetland trends in southwestern Indiana.

The goal of the Indiana Wetlands Conservation Plan (Indiana Department of Natural Resources, 1996) is "*to have no overall loss of wetlands*." On January 28, 1991 the Indiana Department of Transportation signed a memorandum of understanding with the Indiana Department of Natural Resources and the U.S. Fish and Wildlife Service regarding wetland mitigation. As a result, wetland losses are being mitigated using ratios that are designed to increase the number of wetland acres in Indiana. For projects that would take wetland acres, these mitigation replacement ratios can vary from replacing one lost wetland acre with one wetland acre to replacing one lost wetland acre with 4 wetland acres and above depending upon quality.

From this information, *"no net loss"* provides the best explanation of the future trends in Indiana as well as in southwestern Indiana. Conversations with officials at the Indiana Department of Environmental Management indicate that this statement currently provides the best information as to the future direction of wetlands. This goal is also reflected in the mitigation measures that work towards increasing the number of wetland acres in Indiana.

Resources and Publications

Dahl, T. E. 1990. "Wetland Losses in the United States, 1780s to 1980s". US Department of the Interior, Fish and Wildlife Service, Washington, D.C. 13pp.

Indiana Department of Environmental Management. Indiana Wetland Compensatory Mitigation: Inventory (May 2000). James Robb.

Indiana Department of Natural Resources. 1996. "Indiana's Wetlands Conservation Plan"

Liu, Shelley. 1996 Indiana Department of Natural Resources.

Rolley, R. E. 1991. Indiana Wetland Inventory. Indiana Department of Natural Resources, Wildlife Management and Research Notes, no. 532. 6pp.

Shaw, Samuel P. and Fredine, C. Gordon. Wetlands of the United States - their extent and their value to waterfowl and other wildlife. U. S. Department of the Interior, Washington D.C. Circular 39.

U. S. Department of Agriculture. "Wetlands and Agriculture: Private Interests and Public Benefits/ AER-765"

U.S. Fish and Wildlife Service. Patoka River National Wetlands Project, Final Environmental Impact Statement, July 1994.

Definition of Terms

Wetlands. Lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For the purposes of this definition, wetlands must have one or more of the following three attributes:

(1) at least periodically, the land supports predominantly hydrophytes;
(2) the substrate is predominantly undrained hydric soil; and
(3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year.

From Cowardin et al. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service FWS/OBS-79/31. 104 pp.